

**United Kingdom**, pharmacist independent prescribers can prescribe any drugs within their competence. Pharmacists can also supply prescription-only drugs using Patient Group Directions for specific conditions. In **Canada**, the province of Alberta has the broadest scope, as pharmacists with additional authorization may pre- scribe autonomously any prescription-only drug. The rest of the provinces permit prescribing for defined conditions. Manitoba is the only province not allowing prescribing for prescription-only drugs. In the United States: In **Idaho**, **Montana**, and **Colorado** pharmacists can autonomously prescribe for self-limiting and minor conditions, and already diagnosed conditions. It also has State- specific protocols allowing pharmacists to prescribe for certain conditions (e.g., California, Oregon). **Australia**: Five states have limited prescribing for urinary tract infections and contraception renewals, with pilot programs for expanded authority in some regions. **Poland** allows autonomous prescribing for the pharmacist himself (pro-auctore) and family members and members in cohabitation (pro-familiale). **Switzerland** has a set of conditions pharmacists can prescribe for including drugs reclassified as prescription-only drugs. In **Denmark** pharmacists can renew prescriptions for certain conditions. In **France** pharmacists can initiate prescriptions for urinary tract infections and bacterial tonsillitis. **Conclusion**: United Kingdom, Canada (Alberta), United States (Colorado, Montana, Idaho), and Poland (pro-auctore and pro-familiale) have the standard of care model. Government protocols are used in the rest of Canada, United States, Australia, Switzerland, Denmark, and France.

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#### Developing Outcome-Based Performance Indicators for Professional Pharmacy Services: A Mixed-Methods Approach

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**Background**: Professional pharmacy services' outcomes performance measurement has relied on output-based indicators rather than on outcomes.(1) While these metrics are easier to measure and track, they do not directly capture the impact of these services on patient health outcomes. This gap has been noted in the literature, emphasizing the need for a shift towards health outcome-based indicators that more accurately reflect the value and effectiveness of professional pharmacy services. **Purpose**: To define relevant health outcomes and performance indicators to assess professional pharmacy services, through a Design Science (DSRM) approach.

**Study design**: A mixed-methods study design will explore and validate health outcomes and indicators that best suit professional services provided in Portuguese pharmacies. This will be done through semi-structured interviews with pharmacy owners and professional service managers, guided by the Consolidated Framework for Implementation Research 2.0 CFIR).(2) The quantitative component complements this by employing a self-administered questionnaire based on the CFIR 14-Item pCAT model.(3) This method ensures that the defined performance indicators are grounded in real- world practice and perspectives.

**Findings**: Targeting active community pharmacists, constructs such as acceptability, feasibility, and impact, which are critical for determining the practical applicability of the identified indicators, will be assessed. The CFIR framework enables a systematic exploration of key constructs that influence the design and implementation processes, facilitating the identification of health outcome indicators, the services they pertain to, and the characteristics, necessity, and advantages of a performance dashboard.

**Conclusion**: The transition from output-based to health outcome-based performance indicators in professional pharmacy services is crucial for accurately evaluating their impact on patient health. Leveraging the Consolidated Framework for Implementation Research (CFIR) ensures the creation of a user-centred solution grounded in real-world insights. This approach not only bridges existing gaps but also tailors the solution to the needs and challenges of pharmacists, ultimately enhancing the effectiveness of pharmacy service evaluation.

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2 Damschroder, L. J., Reardon, C. M., Opra Widerquist, M. A., & Lowery, J.

(2022). Conceptualizing outcomes for use with the Consolidated Framework for Implementation Research (CFIR): the CFIR Outcomes Addendum. *Implementation science*, 17(1), 7.

3 Robinson, C. H., & Damschroder, L. J. (2023). A pragmatic context assessment tool (pCAT): using a Think Aloud method to develop an assessment of contextual barriers to change. *Implementation Science Communications*, 4(1), 3.

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#### Evaluating Large Language Models in Self-Care: Accuracy of Medicine and Supplement Guidance for Patients

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**Background**: Recent developments in artificial intelligence, particularly large language models, are exerting a profound influence on the medical and pharmaceutical sciences. These tools, once limited to specialized uses in diagnostics and data discovery, are now easily accessible to the general public.

**Purpose**: This study aimed to critically evaluate the performance of large language models in answering patients' self-care questions about medications and supplements.

**Method**: A comprehensive analysis was conducted to evaluate the performance of six leading language models across four key dimensions: correctness, language independence, context sensitivity, and reproducibility. This evaluation was facilitated by a newly developed reference set of questions and a scoring matrix.

**Findings**: The large language models investigated were generally capable of accurately answering most self-care questions and providing relevant health information. However, there was substantial variability in the responses, including potentially unsafe advice, influenced by language, question structure, user context, and time. GPT-4.0 scored the highest on average, while GPT-3.5, Gemini, and Gemini Advanced had varied scores. Responses were sensitive to context and language. In a 60- day experiment involving repeated queries, Perplexity exhibited the greatest variability in response generation, indicating the lowest level of temporal consistency.

**Conclusion**: The high-quality outputs generated by large language models indicate their potential utility in future self-care applications. The newly created benchmark can facilitate further validation and guide the establishment of strict safeguards to mitigate the significant risk of misinformation. Prioritizing patient safety necessitates the establishment of stringent safeguards to mitigate potential risks and optimize the benefits derived from this innovative technology.

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#### First results of a randomized controlled trial evaluating an app- based adherence pharmacy service for ambulatory patients with short-term antibiotic therapy (Re SMAPP Study)

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**Background**: Antibiotics are among the most crucial medicines of our modern age. In Switzerland in 2022, 26% of all prescriptions included co-amoxicillin making it the most widely prescribed antibiotic in the outpatient setting. Forgetfulness is one major challenge to adherence in antibiotic therapy, often resulting in recurring infections and increasing antibiotic resistances. Therefore, re- minding patients to take their antibiotic and educating them about the importance of their intake behavior is a promising approach to improve medication adherence.

**Purpose**: To evaluate the effectiveness of a two-level intervention using an app-based reminder system and motivational/educational text messaging to improve adherence to short-term antibiotic therapy with co-amoxicillin.

**Methods**: This monocentric, cluster-randomized, double-blind, two-arm study is

conducted in a primary care setting with patients newly prescribed co-amoxicillin for 3 up to 14 days. Community pharmacies are randomized to intervention or control group, they recruit patients and provide the app-based service. All participants use the TOM medication management app to track antibiotic intakes, keep a written symptom diary and evaluate their well-being on a 5-point smiley scale. In addition, the intervention group receives medication intake reminders and two types of text messages (educational and motivational) delivered via smartphone. At the end of therapy, adherence counseling is delivered by phone to all participants by the study team to discuss the recorded data (adherence, symptoms, well-being). An online survey is conducted to assess patient satisfaction with the service including the app. Based on the literature, the sample size was calculated with an anticipated 22% improvement in taking adherence, resulting in 58 patients per group (116 patients in total). The primary outcomes are adherence rates, including taking, dosing, and timing adherence. Secondary outcomes include persistence rates, dose-to-dose intervals, time to symptom resolution, time to well-being, the number and severity of symptoms categorized as adverse events, and overall satisfaction of patients and providers with the service. For analysis, both groups will be compared across all primary and secondary outcomes. The study has been approved by the local ethic committee and will be completed by December 2024.

**Findings:** Currently, 56 pharmacies agreed to participate and have recruited a total of 33 patients with an equal distribution between both study arms (Intervention: 16; Control: 17). Final study results will be presented at the conference.

**Conclusion:** n.a.

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#### Co-creation approach to adapting and implementing an interprofessional service targeting initiation adherence in Switzerland: myCare Start –Implementation Science project

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**Background:** The New Medicine Service (NMS), developed in the UK, was effective in improving medication adherence among patients initiating long-term medications. However, international scale up of this complex intervention has highlighted the need for meaningful intervention adaptation to address contextual differences and implementation barriers in new healthcare settings.

**Purpose:** Guided by the O'Catthain et al. (2019) Framework for intervention development and the ADAPT Guidance, the myCare Start –Implementation project (myCare Start-I) utilised a co-creation approach supplemented by contextual information, known theory and empirical evidence to adapt the NMS, developing a contextually fitting myCare Start service model for use within the ambulatory primary care medicine and community pharmacy setting in Switzerland.

**Method:** The co-creation process involved an exploratory qualitative approach, including repeated semi-structured focus groups with stakeholders (patients, physicians, and pharmacists) and consensus-based workshops with investigators to iteratively refine the intervention. An initial context analysis identified 63 contextual factors impacting intervention design or implementation of myCare Start in Switzerland. A panel of interprofessional investigators including primary care physicians and end-user representative (n=15) prioritised these factors,

assessing both the importance of addressing each factor and the confidence that it could be addressed in the Swiss context. The resulting priority areas formed the focus of repeated semi-structured stakeholder focus groups to discuss solutions and possible service adaptations. This iterative process culminated in 12 proposed adaptations of the original NMS intervention which were presented to the investigative team and assessed based on acceptability to Swiss context.

**Findings:** A total of 12 stakeholder focus groups (n=50 stakeholders) and two investigator consensus workshops led to a final list of seven selected intervention adaptations. Adaptations were mapped in accordance with the Framework for Reporting Adaptations and Modifications Expanded (FRAME). Adaptations occurred at both individual (e.g., flexible delivery modes, extended follow-up timeline, pharmaceutical device demonstration options, inclusion of support persons) and organizational levels (e.g., physician referrals to myCare Start, standardized pharmacist feedback to physicians and greater guidance for interventions to assist patients).

**Conclusion:** The co-creation process, as part of a multi-strategy intervention adaptation process successfully produced a contextually appropriate myCare Start model tailored to the needs of Swiss stakeholders. These adaptations are anticipated to enhance fit for the context, recipient and provider alignment, service feasibility, engagement and cultural relevance, that hopefully, will translate to improved intervention and implementation outcomes when the service is evaluated in a Type II hybrid effectiveness-implementation trial in 2025.

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#### Attitudes of Patients with Solid Tumors Towards Deprescribing Non-Cancer Medicines and Proton Pump Inhibitors

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**Background:** Proton pump inhibitors (PPIs) may reduce the effectiveness of systemic cancer treatments by altering the gut microbiome, emphasizing the importance of deprescribing inappropriate non-cancer medicines, including PPIs, to potentially improve survival outcomes.

**Purpose:** To assess the attitudes of patients with solid tumors towards deprescribing non-cancer medicines and PPIs.

**Method:** A cross-sectional study used the Slovenian version of the revised Patients' Attitudes Towards Deprescribing (rPATD) questionnaire, adapted for PPI use with additional questions about pharmacists' roles. The rPATD, using a Likert scale from 1 to 5, was completed by patients using PPIs before oncology consultations or during systemic cancer treatment in a hospital. The study evaluated the proportion of patients with solid tumors willing to stop non-cancer medicines and PPIs based on doctors' or pharmacists' advice and identified influencing factors.

**Findings:** Among 128 patients with cancer prescribed PPIs, 75 (58.6%) were female, with a median age of 66 years (IQR 16). Most had upper gastrointestinal (38; 29.7%), gynecological (29; 22.7%), thoracic (27; 21.1%), or lower gastrointestinal cancers (17; 13.3%). Patients reported taking a median of 3 non-cancer medicines (IQR 3).

The rPATD factor scores indicated a perceived medication burden (median 2.8, IQR 1.0), belief in medication appropriateness (median 3.4, IQR 1.0), concerns about stopping medicines (median 2.8, IQR 0.8), and high involvement in medication management (median 4.3, IQR 0.8).

A high willingness to deprescribe non-cancer medicines based on a doctor's advice was observed (89.9%), while willingness to deprescribe PPIs was lower (79.9%). Logistic regression indicated that older age (OR 1.05, CI 1.00–1.10; p 0.036), greater involvement in medication management (OR 3.13, CI 1.31–7.49; p 0.010), and fewer concerns about stopping PPIs (OR 0.36, CI 0.14–0.93; p 0.036) were associated with increased willingness to deprescribe PPIs on a doctor's advice.

Fewer patients were willing to deprescribe non-cancer medicines (45.3%) or PPIs (36.7%) on a pharmacist's advice. Older age was associated with willingness to